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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,855

03/31/2004

Andrew D. Wilson

13768.810.72

5579

47973

7590

09/24/2009

WORKMAN NYDEGGER/MICROSOFT

1000 EAGLE GATE TOWER

60 EAST SOUTH TEMPLE

SALT LAKE CITY, UT 84111

EXAMINER

HADZONOZ, BANAFSHEH

ART UNIT

PAPER NUMBER

3715

MAIL DATE

DELIVERY MODE

09/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,855

Applicant(s)

WILSON, ANDREW D.

Examiner

Banafsheh Hadizonooz

Art Unit

3715

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21, 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS-100)
Paper No(s)/Mail Date 04/08/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Action

In response to the amendment filed on 06/19/2009, claims 1-21 and 27 are pending.

Claims 22-26 have been cancelled. This office action is made **Non-Final**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,2,9,11, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (US 2005/0226467) in view of Thieme et al. (US 2006/0056662) further in view of Biswas (US 7, 120,280).

Regarding claims 1 and 27, Hatano discloses a method for detecting a pattern object (e.g. biometric image) comprising detecting a physical property of the object (e.g. quality evaluation), computing sum of the set of template data values (see P.3, [0041]-[0042]), calculating a difference score between the stored data values and the input data values (e.g. quality evaluation) and determining whether the difference score is within a match threshold (See Fig.2, elements 203, 204). Hatano does not specifically disclose creating template of the patterned object and each template having data values representing a magnitude of the physical property. However, Thieme discloses encapsulating image's physical property data such as grayscale, dimension etc. and generating templates (See abstract and [0043]-[0044]). Therefore, it would have been

obvious to one of ordinary skill in the art to modify Hatano's invention to generate data values for all the spatially shifting templates as disclosed in Thieme's invention in order to design a system with a more accurate comparison result.

Hatano/Thieme do not specifically disclose the patterned object being placed in any arbitrary orientation or the template having quadrilateral bounding shape. Biswas discloses in his invention a method that allows placing an image on the display surface in any arbitrary orientation without affecting the template matching capability of the device (See Col.7, 13-33). Biswas further discloses acquiring input data values from the interactive display surface, each of the values corresponding to a different one of the plurality of surface coordinate locations of the interactive display surface (e.g. acquiring the coordinate coefficient in order to compare the templates with the original reference image) (See Col.7, 13-33). Biswas further discloses quadrilateral shape of templates aligned with one of the two orthogonal axes (See Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of Biswas' invention into the system and method of Hatano/Thieme in order to design a system that is more efficient in template matching process.

Regarding claim 2, Hatano further discloses calculating the integral sum of input data and determining whether the sum the sum is within a certain threshold (See P. 3, [0041] and P.4, [0046]-[0047]).

Regarding claims 9 and 20, Hatano disclose calculating the difference score for the images as a step in template matching process (See P.6, [0083]-[0085]).

Hatano/Thieme does not expressly disclose the difference score is calculated as a sum of absolute difference and a sum of squared difference. However, this is considered to be a matter of design choice.

Regarding claim 11, Hatano discloses a computer readable memory (e.g. storage unit) to carry out the steps of claim 1 (See Fig. 1, element 4-1).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (US 2005/0226467) in view of Thieme et al. (US 2006/0056662) and further in view of Siegel et al. (US 2006/0034492).

Regarding claim 3, Hatano further discloses the template data value comprises pixel values (See P. 2, [0031]. Hatano/Thieme does not specifically disclose that physical property comprises light and that the pixel values indicate the intensity of light. However, Siegel discloses such in his invention (See P.2, [0033]). Therefore it would have been obvious to one of ordinary skill in the art to incorporate the features of Siegel's invention into the system and method of Hatano/Thieme in order to design a system that more effective image matching process.

Claims 4-8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (US 2005/0226467) in view of Thieme et al. (US 2006/0056662) and further in view of Biswas et al. (US 7,120,280).

Regarding claim 4, Hatano/Thieme discloses creating plurality of templates. Hatano/thieme does not expressly disclose creating a binary mask. However, Biswas discloses creating a binary mask comprising transformed template data values, a mask bounding region having quadrilateral shape (See Fig.1), performing the steps of claim 2

(See Fig.5). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of Biswas into the limitations of Hatano/Thieme's invention in order to design a system with a more effective image processing features.

Regarding claim 5, Biswas discloses generating templates, determining a distance between the first center associated with the mask bonding and a second center (See Fig.3), and determining the redundancy threshold (See Col.3, 43-61 and Fig.5).

Regarding claim 6, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (See Col.3, 43-61, Col.5, 4 - Col.6, 9).

Regarding claims 7 and 8, Biswas further discloses a template matching process using a succession of surface coordinate locations (See Col.6, 26-44).

Regarding claim 10, Biswas discloses computing the statistical moment of the template data and the input and determining whether the data is within the threshold value (See Col.3, 43-61).

Claims 12-19 and 21-26 are rejected under 35 U.S.C 103(a) as being unpatentable over Siegel et al. (US 2006/0034492) in view of Biswas et al. (US 7,120, 280).

Regarding claims 12, 13, Siegel discloses an interactive display (e.g. scanner), a light source that directs the light toward the opposite side of the interactive display and through the display, light sensor and a processing unit wherein the processing unit is in

charge of detecting the intensity of light (See P.2, [0033], P.8, [0077]), and creating a template of the patterned object and acquiring the input data values (see Fig.8). The processing unit is also in communication with the light sensors (e.g. light sensitive elements of the display) (See [0036]). Siegel further discloses template data values representing the intensity of reflected light and acquiring input data values from the interactive display surface with the light sensor (See P.3, [0038]-[0039]) and detecting the intensity of light reflected back from the patterned object (See [0069]). Siegel does not specifically disclose computing sum of the set of template data and calculating the difference score to determine whether or not the score falls within a threshold. However, Biswas discloses such in his invention (See Col.3, 43-61, Fig.5, element 70). Biswas further discloses the quadrilateral boundary region of the templates (See Fig.1). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of the Biswas invention into the limitations of the Siegel invention in order to design a system with a more effective template matching tool.

Siegel discloses a variety of light colors that are directed toward the display (See [0032]). Siegel does not specifically disclose that the light source directs infrared light toward the opposite side of the interactive display. However, the applicant has not disclosed if applying infrared light solves any stated problem or provides any unexpected results. Moreover, one of ordinary skill in the art would expect the system to work equally well with any other light wavelength. Therefore, it would have been obvious to one of ordinary skill in the art to modify the Siegel's invention to include

infrared light source because such modification would have been considered a matter of design choice.

Regarding claim 14, biswas discloses that template data values comprise pixel values (See Fig.5, Col.4, 14-29).

Regarding claim 15, Biswas further discloses a mask bounding region that is used for quadrilateral template bounding (See Col.5, 4- Col.6, 25).

Regarding claim 16, Biswas discloses generating templates, determining a distance between the first center associated with the mask bonding and a second center (See Fig.3), and determining the redundancy threshold (See Col.3, 43-61 and Fig.5).

Regarding claim 17, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (See Col.3, 43-61, Col.5, 4 - Col.6, 9).

Regarding claim 18 and 19, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (See Col.3, 43-61, Col.5, 4 - Col.6, 9), and a template matching process using a succession of surface coordinate locations (See Col.6, 26-44).

Regarding claim 21, Biswas discloses computing the statistical moment of the template data and the input and determining whether the data is within the threshold value (See Col.3, 43-61).

Response to Arguments

Applicant's arguments filed on 06/19/2009 with respect to claims 1-21 have been fully considered and are persuasive.

The applicant argues that the examiner does not cite all and every feature disclosed in the claims in describing the prior arts of record, Hatano et al. (US 2005/0226467), Thieme et al. (US 2006/005662) and Biswas (US 7,120,280). The applicant discusses claim 1 as an example. In the mean time that the examiner has clarified the issues in this rejection, the examiner respectfully disagrees with the fact that prior arts of records do not disclose the features discussed in the claimed invention. For example, the applicant argues that neither one of the prior arts disclose an interactive display surface having a surface origin and a plurality of surface coordinate locations defined along two orthogonal axes. The examiner notes that Thieme discloses obtaining the image data via a scanning device (See figure 1). Most scanning devices have measurements along the X and Y axis to facilitate the coordinate measurements in relation to surface origin. The examiner further notes that this particular feature was cited in the claim preamble, and therefore has not been given a patentable weight.

The applicant further argues that the cited prior arts do not include the feature of quadrilateral template bounding region having a side aligned with one of the two orthogonal axes. The examiner notes that it was clear from the previously cited figure 1

in Biswas reference that the template is in fact aligned with one of the two orthogonal axes.

Regarding the applicant's argument about claim 12, in addition to the discussion above, the examiner notes in paragraph [0036], Siegel discloses the processor being in communication with light sensors. In addition, any processing unit includes some sort of memory that holds the instructions that causes the processor to carry out a plurality of functions.

Conclusion

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Banafsheh Hadizonooz whose telephone number is 571-272-1242. The examiner can normally be reached on 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571) 272- 7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BH

/XUAN M. THAI/
Supervisory Patent Examiner, Art Unit 3715